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Student Paper

Advancing Sustainable Energy: The Carbon Induced Electric Fuel (CIEF)

Santhosh Kumar D*, Sakthi Sivanbu K A†, Kavin Vishwa V‡, Logesh S§

Sree Gokulam Public School, Metro Sameera Gardens, Nenmeli, Chengalpet, Tamil Nadu, India

In this study, we present the development of a compatible battery prototype capable of providing a constant output of 2 volts and 0.2 amperes for up to five days without fluctuations. Utilizing zinc bicarbonate, a byproduct of the process, enables the retrieval of zinc metal, while the generated hydrogen gas can be harnessed to power a turbine system for electricity generation. This novel approach, termed Carbon Induced Electric Fuel(CIEF), offers a dual output of electricity and utilizes greenhouse gases for process continuity. The scalability of CIEF presents promising environmental benefits on a large scale.

1. Introduction

The demand for sustainable energy solutions has prompted innovative approaches to electricity generation. Here, we present a pioneering endeavor in developing a compatible battery prototype, coupled with a Carbon Induced Electric Fuel (CIEF). Our approach aims to harness the potential of zinc bicarbonate and hydrogen gas generated during the electrolysis process to create a sustainable, dual-output electricity generation system.

2. Methodology

Figure-1 (a) Compatible Battery; (b) Prototype; and (c) Multi-meter Measurement

(a) (b) (c)

The development process involved creating a compatible battery prototype (Figure A) and conducting voltage output measurements using a multimeter (Figure C). The prototype demonstrated a constant output of 2 volts and 0.2 amperes for up to five days without fluctuations. The zinc bicarbonate byproduct was evaluated for its recyclability to retrieve zinc metal, while the hydrogen gas was analyzed for its potential utilization in powering a turbine system. A complete schematic view is shown in figure-3.

3. Results and Discussion

Figure B illustrates the prototype developed, showcasing its potential for practical application. The consistent output of 2 volts and 0.2 amperes over a prolonged period highlights the reliability and stability of the system. The utilization of zinc bicarbonate for zinc metal retrieval and hydrogen gas for electricity generation underscores the multifaceted benefits of the CIEF approach. By utilizing greenhouse gases for process continuity, CIEF presents a promising solution for sustainable electricity generation.

*K11 Student Scholar, Sree Gokulam Public School, Chengalpet, Tamil Nadu, India, Pincode: 603003.
Corresponding Author: scesalyt@gmail.com
† K11 Student Scholar, Sree Gokulam Public School, Chengalpet, Tamil Nadu, India. **Contact: kasakthisivanbu@gmail.com**
‡ K11 Student Scholar, Sree Gokulam Public School, Chengalpet, Tamil Nadu, India. **Contact: sgpskavin007@gmail.com**
§ K11 Student Scholar, Sree Gokulam Public School, Chengalpet, Tamil Nadu, India. **Contact: chitralogesh30@gmail.com**
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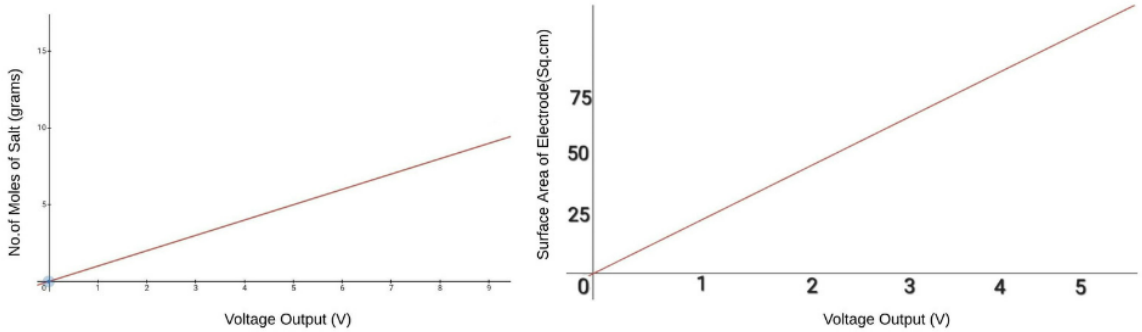

Figue-2 Voltage output with respect to no. of moles and electrode surface are

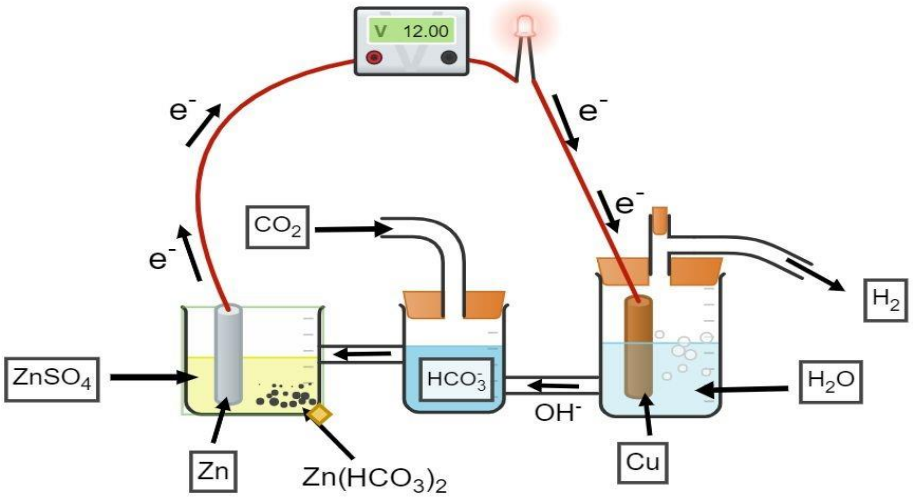

Figure-3 Outline of our prototype (CIEF) - Carbon Induced Electric Fuel

4. Conclusion

In conclusion, the development of a compatible battery prototype integrated with the Carbon Induced Electric Fuel (CIEF) demonstrates a novel approach to sustainable electricity generation. The dual output of electricity, coupled with the utilization of greenhouse gases, presents significant environmental benefits. Further research and large-scale implementation of CIEF hold promise for addressing global energy challenges and advancing towards a sustainable future.

5. References

[1] Ge, C., Xu, D., Qian, Y., Du, H., Gao, C., Shen, Z., ... & Fang, J. (2023). Carbon Materials for Hybrid Evaporation-Induced Electricity Generation System. Green Chemistry. **https://doi.org/10.1039/D3GC02805D**.

[2] De Santis, V., Campi, T., Cruciani, S., Laakso, I., & Feliziani, M. (2018). Assessment of the induced electric fields in a carbon-fiber electrical vehicle equipped with a wireless power transfer system. Energies, 11(3), 684. **https://doi.org/10.3390/en11030684**.

[3] An, J., Li, N., Wan, L., Zhou, L., Du, Q., Li, T., & Wang, X. (2017). Electric field induced salt precipitation into activated carbon air-cathode causes power decay in microbial fuel cells. Water research, 123, 369-377. **https://doi.org/10.1016/j.watres.2017.06.087**.

[4] Bogaerts, A., & Centi, G. (2020). Plasma technology for CO2 conversion: a personal perspective on prospects and gaps. Frontiers in Energy Research, 8, 111. **https://doi.org/10.3389/fenrg.2020.00111**.

[5] Gentgen, C., Casadesus Vila, G., Lordos, G. C., Posada, J., Long, M., Nagareddy, L., ... & De Weck, O. L. (2022). BART & MARGE: A Resilient and Scalable Architecture for In-Situ Propellant Production on Mars Using Large Trucks. In ASCEND 2022 (p. 4315).

[6] KA, S. S., & Logesh, S. (2024). CIEF-Carbon Induced Electric Fuel: A Revolutionary Approach to Sustainable Energy Generation. Acceleron Aerospace Journal, 2(2), 166-170. **https://doi.org/10.61359/11.2106-2407**.

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7. Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

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